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## **The Immature and Adult Stages of a New Species of Scatopse from Maine. (Diptera: Scatopsidae).**

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(Plate IV.)

Some flies which differ from previously described species but closely resembling *S. subnitens* Verrall (= *nigra* (Mg.) Edw.) an European species, were submitted to me by Dr. O. A. Johannsen of Cornell University. The larvae and pupae were found beneath the loose bark of spruce logs, which were floating in the Penobscot River, in the vicinity of saw mills, at Orono, Maine, in October. They occurred just above the water line where they were kept moist by the capillary action.

*Scatopse* (*Rhegmoclema*) *similis* n. sp.

*Larva.* Head capsule strongly sclerotized, flattened dorso-ventrally, truncate, slightly longer than wide; surface generally smooth on top but laterally sculptured. Eyes absent. Antennae small, slender, with papillae-like blade or spike on the second segment (fig. 2). Labrum with groups of fine spines projecting from its under surface; premandibles with five distinct teeth, the fourth and fifth being finer and longer than the first three. Mandibles with four teeth in one plane, and one more proximad directed toward the others. The "leaf-like structure" found in some other species was not observed in *S. similis* but in its place were several long, stout bristles. Besides these there is a fringe of bristles extending about the distal third of the mandible on the dorso-lateral side. The maxilla is similar to that of other species, the distal lobes with blunt teeth.

Body composed of twelve segments, each of which, except the eleventh, more than twice as broad as long (fig. 1); dorsal side more strongly sclerotized than the ventral. First thoracic segment bears a lateral spiracle; first six abdominal segments are of uniform width; first abdominal segment apparently overlapping the third thoracic as well as the second abdominal, and somewhat bi-convex with reference to its anterior and pos-

terior margins. Each abdominal segment with a pair of lateral spiracles, except the eighth and ninth; those on the eighth abdominal segment project caudally, stout, and heavily sclerotized; ninth tergite projecting over the bases of stout caudal papillae (fig. 6).

The dorsal setae pattern of *S. similis* is quite characteristic (fig. 1). There is a median longitudinal row of bristles on all segments except eleven and twelve. This row is double on segments one to four inclusive and partly so on the fifth and sixth. On the thoracic segments there are two more rows of setae on each half; those next to the median row diverging anteriorly. The next row on the first two segments is almost parallel to the median row. It is joined by short, slightly curved, transverse rows. On the third segment the lateral longitudinal row also diverges from the posterior to the anterior margin. On segments four to ten inclusive, in addition to the median row, there are three rows in each dorsal half of a segment. Often the third row is considerably broken. These rows are nearly parallel with the median row. On the fourth segment the rows next to the median seem to have at their anterior ends small loops. These, although less regular, are found in a similar position on segments five to nine inclusive. On the sixth segment and those following, the median row of setae appears to have a small, more or less circular area of setae at the anterior end. The setae on the eleventh segment (fig. 6) roughly represent the letter "W" with the outer arms pointing anteriorly. The setae on this segment are longer and stronger than those previously described. On segments four to ten inclusive, there is, on the posterior border of each segment, a broken line of hairs connecting the posterior ends of the longitudinal row of bristles. This row is incomplete on the third segment. Segments five to ten inclusive also appear to have an anterior fold on the lateral margins of each segment. This is also lined with hairs slightly longer than the setae. Laterally, each segment except the first and last two, have two tufts of hairs, one anterior just in front of the spiracles, the other posterior. The first segment has the anterior lateral border margined with hairs and the eleventh segment has the entire lateral border thus margined, but with considerably longer hair. The setae, under very high magnification, appear like the teeth of a comb as there are often five or six very close together in a straight line. These are found especially on the median row, and on the lateral rows of the first four segments. Groups of fewer setae, of this type, are scattered without pattern on the ventral surface. The tubercles

of the posterior spiracles are stouter, and more heavily sclerotized than the caudal appendages. They are nearly parallel with them and bear only a few very tiny hairs, differing in this respect from some other described species, in which, the hairs are longer. In the larva of *S. atrata* described by Malloch in 1917 the spiracular tubercles appear on the dorsal side near the anterior border of the 12th segment. The caudal appendages in the latter species also appear on the dorsal side but near the posterior border of the 12th segment and diverge rather sharply. In the larva of *S. similis* the caudal appendages are slightly tapering, and covered at their tips and on their interior margins by very long hair. On the ventral surface the posterior spiracular tubercles clearly show the trachea entering them (fig. 7). There is a "V" shaped area on the eleventh and twelfth sternites which is bordered by a wide diffuse line of long hair. These hairs guard the anal opening. In other species this line is more regular. Length of full grown larva about 4.0 mm.

The *pupa* of *S. similis* is very similar to those of other members of the genus *Scatopse*, except in the structure of the prothoracic spiracular organs. The pupa forms within the last larval skin, and through this, one can observe on the ventral side, the sheaths for the appendages. On the dorsal side, however, projecting through the larval skin, in the third segment along the anterior margin, a pair of long "horn-like" processes break through. These are the prothoracic respiratory organs. In *S. subnitens* and also in *S. atrata* each of these organs bifurcates into equal parts about the middle of their length. The *S. similis* pupa as seen from some angles seems to have a straight unbranched organ, but, by turning it, one may notice a small branch near the middle containing a few tracheal openings (fig. 3). The remainder of the organ at its tip and on the distal half is closely covered by the spiracular openings, which appear as the ends of tiny tubes. Six pairs of lateral pupal respiratory processes are found which pierce the larval skin in the same line as the last abdominal pair. The pupal organs are longer than those of the larva.

♂ ♀. The adult of *S. similis* closely resembles that of *S. subnitens* Verr. except in a slight difference of wing structure. The wings of *S. subnitens* are described as being milky white. In *S. similis* they are transparent hyaline. The cubital veins more closely approach the wing margin in *S. similis* than in *S. subnitens*.

Length 2 mm. Head and body black, the latter glistening,

legs yellow to dark brown. Facets of eyes interspersed with short brown hairs. Antennae ten-segmented, slightly longer than the height of the head; distal segment is as long as the three adjacent segments; each segment bearing several bristles in addition to numerous fine hairs; the second segment longer than the first or third but of the same width as the remainder of the segments. Scutellum, black, with numerous yellow hair. Mesonotum very dark brown, glistening, with only a few hairs. Abdomen long and narrow, closely covered with a gray pubescence; slightly depressed dorsoventrally.

The male is easily distinguished by a somewhat pointed tergite at the tip of the abdomen. Beneath the claspers the last sternite projects in a rounded point (fig. 4). The female has light colored, haired lobes as in other species.

Wing (fig. 5) transparent hyaline; first three veins very heavy and black, ending at about the middle of the costal margin, the other veins very light in color; prefurca of median vein about one-half the length of either branch; first branch ends at the apex; both branches at first parallel but diverge rather sharply near the wing margin; first cubital vein extends beyond the half of the wing, where it suddenly bends toward the wing margin, but not quite attaining it; second cubital vein thick and strongly sinuous, having an arc of a small circle at its middle; second cubital vein, like the first, not quite reaching the wing margin and stopping abruptly very close to it; anal vein reduced. A pair of spurious veins appears between the media and cubitus, and after being closely parallel to the middle of the wing, diverge at an angle of about thirty degrees. Costal margin with stout bristles on the first two-thirds, beyond which point they gradually become finer, but interspersed with a few longer hairs beyond the point where the second branch of the media reaches the margin. Halteres very dark brown, almost black.

The adult *S. similis* most closely resembles *S. atrata* and *S. pygmaea* of the species previously described for North America, differing in the relative length of the prefurca. The prefurca in *S. atrata* is two-thirds of the length of the posterior branch of the median fork, in *S. similis* it is slightly less than half the length of the posterior fork, in *S. pygmaea* it is about one-fourth of the length of the posterior branch of the fork.

This is the unnamed species referred to by Johannsen in Aquatic Diptera, Part I, (Memoir 164, Cornell University Experiment Station, 1934, page 49).